

Spine Treatment Appraisal Report (STAR): Interbody Fusion Does not Fully Protect Against Rod Failure in Long Posterior Spinal Fusion for Adult Spinal Deformity

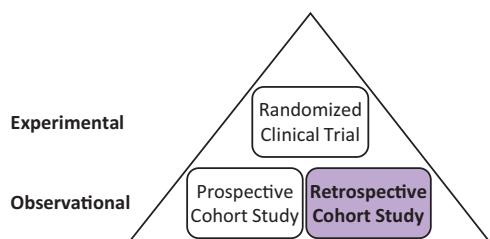
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El Dafrawy M, Bridwell K, Adogwa O, Shlykov M, Koscsó J, Lenke LG, Lertudomphonwanit T, Kelly MP, Gupta M. Rod fractures and nonunions after long fusion to the sacrum for primary presentation adult spinal deformity: a comparison with and without interbody fusion in the distal lumbar spine. *Spine Deform.* 2020. doi: 10.1007/s43390-020-00174-6. Online ahead of print. PMID: 32725494

Keywords

adult spinal deformity, lumbosacral junction, pseudarthrosis, rod fractures

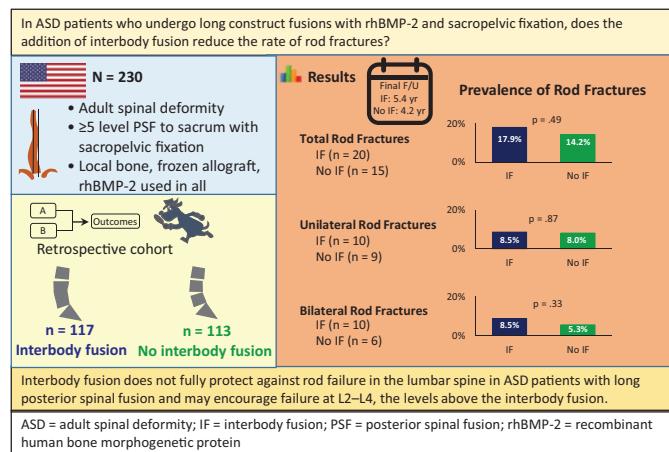
Study Type



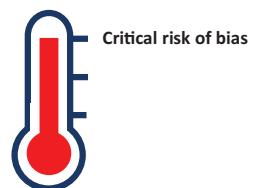
Study Quality:



Visual Abstract



Risk of Bias:



Overall Risk of Bias Rating

Confounding	☆☆☆
Selection of participants	☆☆☆
Classification of intervention	☆☆☆
Adhering to intervention	☆☆☆
Missing data	☆☆☆
Measurement of outcomes	☆☆☆
Reported results	☆☆☆

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Why Is This Study an Important Topic?

The rate of rod fractures (RFs) in the lower lumbar spine is substantial in adult spinal deformity (ASD) patients. Whether anterior column support is useful with the combination of contemporary sacropelvic fixation and use of rhBMP-2 in ASD with long posterior spinal fusion (PSF) remains unanswered.

What Was the Primary Clinical Question?

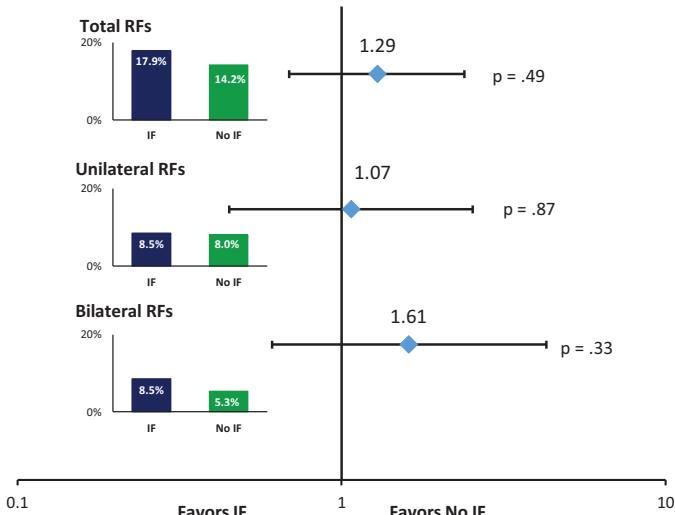
In ASD patients who undergo long construct fusions with rhBMP-2 and sacropelvic fixation, does the addition of interbody fusion reduce the rate of rod fractures?

Study Characteristics

Population:	<u>Included:</u> Adults ≥ 18 years with a diagnosis of ASD who underwent ≥ 5 level primary posterior spinal fusion to the sacrum with sacropelvic fixation. <u>Excluded:</u> Deformity as a result of active infection, trauma or tumors; those who underwent 3-column osteotomy or with multi-rod constructs (>2 rods); prior fusion or spinal deformity surgery.
Intervention:	Group 1, Interbody fusion: Long posterior spinal fusion with sacropelvic fixation, local bone, fresh frozen allograft and rhBMP-2, with interbody fusion at the caudal level of the construct. (n=117, mean age=57 years, 6% male)
Comparison:	Group 2, No interbody fusion: Long posterior spinal fusion with sacropelvic fixation, local bone, fresh frozen allograft and rhBMP-2. (n=113, mean age 58 years, 6% male)
Outcomes:	Rod fractures
Time:	Final follow-up: Interbody fusion, mean 64.3 months; no interbody fusion, mean 49.8 months

Results

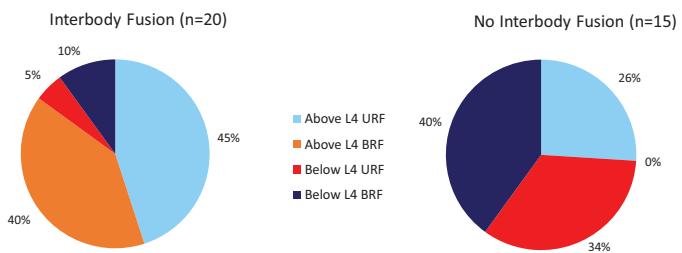
Result 1. Prevalence (%) of rod fractures and prevalence ratios (95% CI) comparing interbody fusion (IF) vs. no interbody fusion (no IF)



Result 2. Incidence rate of rod fractures (% per year)

	Interbody fusion	No interbody fusion	p-value
Combined rod fractures	3.7	3.7	.91
Unilateral rod fractures	2.1	1.8	.25
Bilateral rod fractures	1.6	1.0	.02

Result 3. Location of rod fractures



How Will This Affect the Care of My Patients?

Surgeons generally accept that distal interbody fusion is needed for long fusion to the sacrum in order to avoid higher nonunion rates. This study suggests that this may not be the case, especially if rhBMP-2 is used.